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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/780,423	02/12/2001	Atsuomi Inukai	108573	8148

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OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320

EXAMINER

PIZIALI, JEFFREY J

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/780,423

**Applicant(s)**

INUKAI, ATSUOMI

**Examiner**

Jeff Piziali

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 May 2005 has been entered.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 14, 15, and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. The term "a slit formed in the sensor substrate near each of the strain sensors" in independent claims 1, 14, and 15 is a relative term which renders the claim indefinite. The term "near" is not defined by the claim, the specification does not provide a standard for ascertaining

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the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. One of ordinary skill in the art would be unable to determine what distance between a substrate slit and strain sensor constitutes *nearness*.

6. Moreover, independent claims 1, 14, and 15 each recite the limitation "the slit inducing an increase in an amount of deformation." There is insufficient antecedent basis for this limitation in the claims. It would remain unclear to one skilled in the art what the given foundation amount of such deformation would otherwise be. What amount of deformation is being increased (i.e. compared to what)?

7. Claim 21 recites the limitation "sensors substrate" in line 5 and "the substrate section" in line 11. There is insufficient antecedent basis for either limitation in the claim. It is unclear whether the "sensors substrate" is meant to refer to the "sensor substrate" or some other external substrate. Moreover, it is unclear whether "the substrate section" is meant to refer to the strain detecting substrate section, the signal processing substrate section, or some other substrate section.

### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-4, 7-10, 12-15, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Maeda (US 6,512,510).

Regarding claim 1, Maeda discloses a pointing device [Figs. 1 & 3; P1] including: a sensor substrate [Figs. 2 & 3; 8] having a flat board form; a stick member [Fig. 3; 2] vertically provided on one surface of the sensor substrate; at least a first pair of strain sensors [Fig. 3; 9a & 9c] formed on another surface of the sensor substrate that is opposite to the one surface on which the stick member is provided, the strain sensors in the first pair being arranged in symmetrical relation to each other with respect to the stick member; and a slit [Fig. 3; 6 & 8d] formed in the sensor substrate near each of the strain sensors in the first pair, the slit inducing an increase in an amount of deformation generated in the sensor substrate during operation of the stick member (see Column 5, Line 34 - Column 6, Line 64).

Regarding claim 2, Maeda discloses the sensor substrate is made of a flexible insulative material (see Column 5, Lines 61-65).

Regarding claim 3, Maeda discloses the strain sensor is made of a resistive material which changes its resistance value with stress applied to the strain sensor (see Column 5, Line 66 - Column 6, Line 64).

Regarding claim 4, Maeda discloses the resistance material is formed adhering onto the insulative material by a layer forming technique (see Column 5, Line 66 - Column 6, Line 31).

Regarding claim 7, Maeda discloses a second pair of strain sensors [Fig. 3; 9b & 9d] arranged on the another surface of the sensor substrate in a direction [Fig. 3; Y1] perpendicular to a line [Fig. 3; X1] connecting the first pair of strain sensors while passing through a center of the stick member, wherein the strain sensors are arranged at 90 degree angular intervals around the stick member (see Column 6, Lines 1-64).

Regarding claim 8, Maeda discloses two parallel slit portions are provided at both sides of each of the strain sensors, and the slit portions formed between the strain sensors adjacently arranged are connected to form the slit in an L-shape (see Fig. 3; Column 5, Lines 39-65).

Regarding claim 9, Maeda discloses four L-shaped slits are formed at 90 degree angular intervals around the stick member, and the four L-shaped slits jointly form a cross-shaped intersecting area (see Fig. 3; Column 5, Line 39 - Column 6, Line 3).

Regarding claim 10, Maeda discloses chip resistances [Fig. 3; 10] capable of being trimmed, connected in series with the strain sensors correspondingly and arranged out of the intersecting area on the sensor substrate (see Column 6, Lines 1-31).

Regarding claim 12, Maeda discloses the connecting substrate section is produced by formation of cut-out portions from both sides of the sensor substrate in its width direction toward a center thereof (see Figs. 2 & 3; Column 5, Line 54 - Column 6, Line 64).

Regarding claim 13, Maeda discloses an engagement member portion [Fig. 3; 3] protruding from a lower end of the stick member; an attachment hole [Fig. 3; 8a] formed in the sensor substrate, in which the engagement portion is inserted; and a fixing member [Fig. 3; 12] for fixing the engagement portion of the stick member inserted in the attachment hole, the fixing member being attached from the another surface of the sensor substrate; wherein the stick member is vertically provided on the sensor substrate in an engagement relation thereto (see Fig. 3; Column 6, Lines 13-31).

Regarding claim 14, this claim is rejected by the reasoning applied in the above rejection of claim 1, furthermore Maeda discloses a keyboard [Fig. 1] provided with a plurality of keys [Fig. 1; 27] arranged on a keyboard substrate and a pointing device [Fig. 1; P1] mounted on a part of an operating face of the keyboard (see Column 1, Line 15 - Column 2, Line 41).

Regarding claim 15, this claim is rejected by the reasoning applied in the above rejection of claims 1 and 14, furthermore Maeda discloses a controller [i.e. computer] for controlling various data [i.e. signals] input with the keys on the keyboard; and a display [i.e. inherent for cursor display] for displaying the data [i.e. cursor signals] under control by the controller (see Column 1, Line 41 - Column 2, Line 28).

Regarding claim 21, Maeda discloses a strain detecting substrate section [Fig. 3; 4a-4d] on which the stick member and the strain sensors in both the first and second pairs are disposed,

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this section being used for detecting an amount of strain of the sensors substrate by means of the strain sensors, the strain being caused by operation of the stick member; and a signal processing substrate section [Figs. 2 & 3; 10] for signal processing [i.e. signal transferring] the strain amount of the sensor substrate detected by the strain detecting substrate section; wherein the strain detecting substrate section and the signal processing substrate section are connected through a connecting substrate section [Figs. 2 & 3; 8c] that is narrower in width than the substrate section (see Column 5, Line 34 - Column 6, Line 64).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. (US 6,512,510).

Regarding claim 5, Maeda does not expressly disclose the layer forming technique is selected from among a vacuum deposition method, a sputter method, and a vapor phase deposition method. However, such layer forming techniques were well known and commonly understood at the time of invention. Therefore, it would have been obvious to one skilled in the art at the time of invention to use a vacuum deposition method, a sputter method, or a vapor phase deposition method as Maeda's layer forming technique, so as to form the resistance

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material adhering to the insulative material using traditionally appropriate and operationally successful layering methods.

Regarding claim 6, Maeda does not expressly disclose the resistance material is mainly composed of carbon. However, resistance materials made mainly of carbon were well known and commonly understood at the time of invention. Therefore, it would have been obvious to one skilled in the art at the time of invention to use mainly carbon as Maeda's resistance material, so as to compose the resistance material using a operationally appropriate and commonly available material.

12. Claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. (US 6,512,510) in view of the present application's own admission of prior art.

Regarding claim 16, Maeda does not expressly disclose each of the strain sensors is formed with a plurality of windows in which the resistance material is absent, the windows being arranged in aligned relation to a line connecting the pair of strain sensors while passing through a center of the stick member, and also each of the strain sensors is formed with a notch which is made by a trimming process of irradiating a laser beam to the strain sensor along the alignment direction of the windows.

However, the present application discloses, as prior art, forming strain sensors [Fig. 14; 153] with a plurality of windows in which the resistance material is absent, the windows being arranged in aligned relation to a line connecting the pair of strain sensors while passing through a center of the stick member, and also each of the strain sensors is formed with a notch [Fig. 14,

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153a] which is made by a trimming process of irradiating a laser beam to the strain sensor along the alignment direction of the windows (see Figs. 14 & 15; Page 2, Line 21 - Page 3, Line 27).

Maeda and the present application's prior art disclosure are analogous art, because they are from the shared field of strain sensing pointing devices. Therefore, it would have been obvious to one skilled in the art at the time of invention to use such a strain sensor formation as Maeda's strain sensor circuitry, so as to prevent the inconsistency in an offset voltage outputted due to the sensors.

Regarding claim 17, the present application discloses, as prior art, the trimming process making the notch so that an endpoint of the notch is received within the window (see Figs. 14 & 15; Page 2, Line 21 - Page 3, Line 27).

Regarding claim 18, Maeda does not expressly disclose that the resistance material is formed adhering onto the insulative material by a thick layer printing technique. However, such a layer forming method was well known and commonly understood at the time of invention. Therefore, it would have been obvious to one skilled in the art at the time of invention to use a thick layer printing technique as Maeda's layer forming method, so as to form the resistance material adhering to the insulative material using a traditionally appropriate and operationally successful layering method.

Regarding claim 19, Maeda does not expressly disclose that the resistance material is a ruthenium material. However, resistance materials made from ruthenium materials were well

known and commonly understood at the time of invention. Therefore, it would have been obvious to one skilled in the art at the time of invention to use ruthenium material as Maeda's resistance material, so as to compose the resistance material using a operationally appropriate and commonly available material.

Regarding claim 20, Maeda does not expressly disclose the ruthenium material is ruthenium dioxide. However, resistance materials made ruthenium dioxide were well known and commonly understood at the time of invention. Therefore, it would have been obvious to one skilled in the art at the time of invention to use ruthenium dioxide as Maeda's resistance material, so as to compose the resistance material using a operationally appropriate and commonly available material.

### ***Response to Arguments***

13. Applicant's arguments filed 17 May 2005 have been fully considered but they are not persuasive. The applicant contends the cited prior art of Maeda (US 6,512,510) neglects teaching strain sensors being formed on a surface of the sensor substrate opposite that of the stick member (see page 9 of the amendment). However, the examiner respectfully disagrees. Maeda explicitly discloses, "The flexible substrate 8 is attached to the control member 2 bonded to the mounting member 12 by passing the operating portion 3 through the hole 8a of the flexible substrate 8, bonding the lower surface of the base portion 8b onto the beam portions 4a, 4b, 4c, and 4d, and bonding the extension 8c onto the extension 13 with an adhesive. When the flexible substrate 8 is attached to the control member 2, the strain gauges 9a, 9b, 9c, and 9d are

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respectively placed on the beam portions 4a, 4b, 4c, and 4d. The connection conductors 10 at the end of the extension 8c are placed on the extension 13 and within the surface area of the control member 2 or the mounting member 12" (see Figs. 2 & 3; Column 6, Lines 20-31). By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



J.P.

26 May 2005



**BIPIN SHALWALA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**